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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,487	02/26/2004	Gregory Kaduchak	S-100,597	7990
35068 7590 12/10/2007 LOS ALAMOS NATIONAL SECURITY, LLC LOS ALAMOS NATIONAL LABORATORY PPO. BOX 1663, LC/IP, MS A187 LOS ALAMOS, NM 87545			EXAMINER TABATABAI, ABOLFAZL	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 12/10/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/789,487	Applicant(s) KADUCHAK ET AL.	
	Examiner Abolfazl Tabatabai	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on February 26, 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **FINAL ACTION**

### **Response to Amendments/Arguments**

1. Applicant's arguments, see (pages 4-9), filed on September 19, 2007, with respect to the rejection(s) of claims 1, 2 and 4-9 under Blumenfeild et al (U. S. 6, 867, 851 B2) and claim 3, under Blumenfeild et al (U. S. 6, 867, 851 B2) in view of Fein et al (U. S. 2004/0159773 A1) have been fully considered and are not persuasive.

Therefore, This Office Action Made Final.

2. In remarks, applicants argued in substance that, (a) Blumenfeld apparatus includes a substrata holder that holds the substrate and supported DNA in place on a CCD array. Applicant's claim 1, on the other hand, is drawn to an apparatus for directly imaging small particles directly contacting the surface of a pixel array. In contrast to Blumenfeld, applicant's claimed apparatus does not include a substrate holder, or even a substrate. The substrate would prevent the particles from directly contacting the surface of a pixel array. Thus, Blumenfeld does not anticipate claim 1; (b) Blumenfeld does not anticipate claim 2 because: (i) Applicant's claim 2 depends from claim 1; (ii) Blumenfeld teaches an apparatus with a substrate-supported DNA array and sample holder for holding the substrate in place; and (iii) Applicant's claimed limitations do not include a substrate holder, or even a substrate; (c) Blumenfeld deposits an assay on a substrate, not directly on a CCD array. The substrate prevents placing particles directly on the surface of the pixels. Furthermore, Blumenfeld does not teach or suggest the production of an image of a particle or particles. In fact, Blumenfeld is silent with regard

to any disclosure of particles. Thus, Blumenfeld does not anticipate claim 4; (d)

Blumenfeld deposits an array on a substrate, not directly on a CCD array. The substrate prevents placing particles directly on the surface of the pixels. Furthermore, Blumenfeld does not teach or suggest the production of an image of a particle or particles. In fact, Blumenfeld is silent with regard to any disclosure of particles. Claims 5 and 6 depend from claim 4. Thus, Blumenfeld does not anticipate claims 5 or 6; (e) Blumenfeld, on the other hand, teaches an apparatus having a substrate and a substrate holder. An assay is deposited on the substrate and the substrate holder holds the substrate in place.

Thus, Blumenfeld does not anticipate claim 7; (f) Blumenfeld teaches an apparatus with a substrate and substrate holder. Applicant does not teach a substrate holder, or even a substrate. The substrate would prevent particles from directly contacting the surface of the pixel array. Thus, Blumenfeld teaches away from the claimed invention. Thus, the combination of Blumenfeld and Fein fails to render obvious claim 3.

3. However, in response to Applicant's argument, (a) Examiner would like to point out that claim language is given its broadest reasonable interpretation. The specification is not measure of invention. Therefore, limitations contained therein cannot be read into the claims for the purpose of avoiding the prior art. *Ir re Spork*, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968). In the instant case, Examiner indicated that the claim language does not preclude the use of substrate holder. Furthermore the claim is using the connecting phrase comprising an integrated array of light sensitive pixels (please note, to column 16, lines 31-37, which the detector pixels of suitable electronic light detector arrays may integrate light emission with time, in much the same way that

longer photographic exposure is used to develop faint images) having a surface configured to receive the small particles within a distance effective for the particles (please note, to column 10, lines 36-43 and column 12, lines 57-64) to affect the pixel readout amplitude (please note, to column 28, lines 41-44) and where the pixels have an area on the order of the area of the small particles to be directly imaged (please note, to column 6, lines 4-11); a light source for illuminating the integrated array (please note, to column 16, lines 31-37); and, means for displaying an output from the pixels to provide an image of the small particles directly contacting the surface of the array (please note, to column 12, lines 1-4 and column 16, 46-54) which does not preclude the reference from having additional limitations; (b) Examiner indicated that the claim language does not preclude the use of substrate holder. Furthermore the claim is using the connecting phrase comprises the integrated array of light sensitive pixels is selected from the group consisting of CCD arrays and CMOS arrays (please note, to column 9, lines 18-21) which does not preclude the reference from having additional limitations; (c) Examiner indicated that the claim language does not preclude the use of substrate holder. Furthermore the claim is using the connecting phrase comprises the production of an image of a particle (please note, to column 24, lines 56-63) which does not preclude the reference from having additional limitations; (d) Examiner indicated that the claim language does not preclude the use of substrate holder. Furthermore the claim is using the connecting phrase comprises the production of an image of a particle (please note, to column 24, lines 56-63) which does not preclude the reference from having

additional limitations; (e) Examiner indicated that the claim language does not preclude the use of substrate holder. Furthermore the claim is using the connecting phrase comprising an integrated array of light sensitive pixels (please note, to column 16, lines 31-37) having a surface configured to directly receive the small particles within a distance effective for a selected characteristic of the particles to be directly detected by the light sensitive pixels and where the light sensitive pixels have an area on the order of the area of the small particles to be directly imaged (please note, to column 6, lines 1-9 and column 14, lines 18-21); video means for displaying an output from the light sensitive pixels to provide an image of the selected characteristic of the small particles directly contacting the surface of the array (please note, to column 9, lines 54-61) which does not preclude the reference from having additional limitations; (f) Examiner indicated that the claim language does not preclude the use of substrate holder. Furthermore the claim is using the connecting phrase comprises the pixel area is less than 5 micron square [please note, page 6, column 2, paragraph (0057) of Fein] which does not preclude the reference from having additional limitations.

## **Claim Rejections - 35 USC § 102**

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2 and 4-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Blumenfeld et al (U. S. 6,867,851 B2).

Regarding claim 1, Blumenfeld discloses an apparatus for directly imaging small particles consisting essentially of:

an integrated array of light sensitive pixels (please note, to column 16, lines 31-37, which the detector pixels of suitable electronic light detector arrays may integrate light emission with time, in much the same way that longer photographic exposure is used to develop faint images) having a surface configured to receive the small particles within a distance effective for the particles (please note, to column 10, lines 36-43 and column 12, lines 57-64) to affect the pixel readout amplitude (please note, to column 28, lines 41-44) and where the pixels have an area on the order of the area of the small particles to be directly imaged (please note, to column 6, lines 4-11);

a light source for illuminating the integrated array (please note, to column 16, lines 31-37); and,

means for displaying an output from the pixels to provide an image of the small particles directly contacting the surface of the array (please note, to column 12, lines 1-4 and column 16, 46-54).

Regarding claim 2, Blumenfeld discloses the apparatus of claim 1, wherein the integrated array of light sensitive pixels is selected from the group consisting of CCD arrays and CMOS arrays (please note, to column 9, lines 18-21).

Regarding claim 4, Blumenfeld discloses a method for directly imaging small particles comprising:

forming an integrated array of light sensitive pixels having a surface configured to receive the small particles within a distance above a light sensitive surface of the pixels effective to detect selected characteristics of the small particles (please note, to column 14, lines 36-39 and column 18, lines 32-37);

placing the small particles directly on the surface of the pixels (please note, to column 14, lines 1-10);

outputting an image signal from individual ones of the light sensitive pixels (please note, to column 31, lines 13-19); and,

displaying the image signal to provide a visualization of the small particles (please note, to column 12, lines 23-30 and column 14, lines 18-21).

Regarding claim 5, Blumenfeld discloses the method of claim 4, further including the step of selecting an integrated array having pixel sizes less than the size of the small particles (please note, to column 9, lines 23-28).

Regarding claim 6, Blumenfeld discloses the method of claim 4, further including the step of illuminating with a collimated light source the integrated array of light sensitive pixels having the small particles on the surface of the pixels (please note, to column 21, lines 61-66).

Regarding claim 7, Blumenfeld discloses an apparatus for directly imaging small particles comprising:



an integrated array of light sensitive pixels (please note, to column 16, lines 31-37) having a surface configured to directly receive the small particles within a distance effective for a selected characteristic of the particles to be directly detected by the light sensitive pixels and where the light sensitive pixels have an area on the order of the area of the small particles to be directly imaged (please note, to column 6, lines 1-9 and column 14, lines 18-21); video means for displaying an output from the light sensitive pixels to provide an image of the selected characteristic of the small particles directly contacting the surface of the array (please note, to column 9, lines 54-61).

Regarding claim 8, Blumenfeld discloses the apparatus of claim 7, wherein the integrated array of light sensitive pixels is selected from the group consisting of CCD arrays and CMOS arrays (please note, to column 9, lines 18-21).

Regarding claim 9, Blumenfeld discloses the apparatus of claim 8, where the selected characteristic is selected from the group consisting of: absorption (please note, to column 16, lines 31-33), light scattering (please note, to column 11, line 38 and column 19, lines 29-33), and light emission (please note, to column 30, lines 9-11).

#### **Claim Rejections - 35 USC § 103**

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenfeld et al (U. S. 6,867,851 B2) in view of Fein et al (U. S. 2004/0159773 A1).

Regarding claim 3, Blumenfeld is silent about the specific details regarding the apparatus of claim 2, where the pixel area is less than 5 micron square.

In the same field (imaging system) of endeavor, Fein discloses system and methodology comprises the pixel area is less than 5 micron square [please note, page 6, column 2, paragraph (0057)].

It would have been obvious to a person of ordinary skill in the art at the time to use the pixel area is less than 5 micron square as taught by Fein in the system of Blumenfeld because Fein provides Blumenfeld an improved biological material imaging systems which is enable the production of improved images (higher Effective Resolved Magnification (ERM), improved Absolute Spatial Resolution (ASR), improved depth of field (please note, to page, 19, column 1, paragraph [0231]).

#### **Other Prior Art Cited**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cresswell et al (U. S. 5,621,821) disclose system for sampling the sizes, geometrical distribution, and frequency of small particles accumulating on a solid surface.

Hornbeck (U. S. 5,061,049) discloses spatial light modulator and method.

Grady (U. S. 7,135,686 B1) discloses low noise x0ray detector for fluoroscopy.

### **Conclusion**

**9. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### **Contact Information**

**10.** Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (571) 272-7458.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Bhavesh Mehta, can be reached at (571) 272-7453. The fax phone number for organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai

Patent Examiner

Technology Division 2624

December 6, 2007

*A-Tabatabai*